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(54) Printer

(57) A support mechanism (50) has an mounting frame (51) fixed to a cover (3), a support frame (52) for supporting a platen roller (12) and a stationary blade (41), and a compression spring (53) attached to the mounting frame (51) and the support frame (52). The support frame (52) can pivot relative to the mounting frame (51) around engaging pins (52c) of the support frame (52), and slide relative to a pivot of the cover (3). A positioning pin (61) and a positioning notch (62) are provided on a main frame (4) that pivotally supports the cover for positioning the support frame (52) to a position at which the platen roller (12) and the stationary blade (41) are aligned with and positioned opposite a print head (11) and a movable blade (32), respectively.

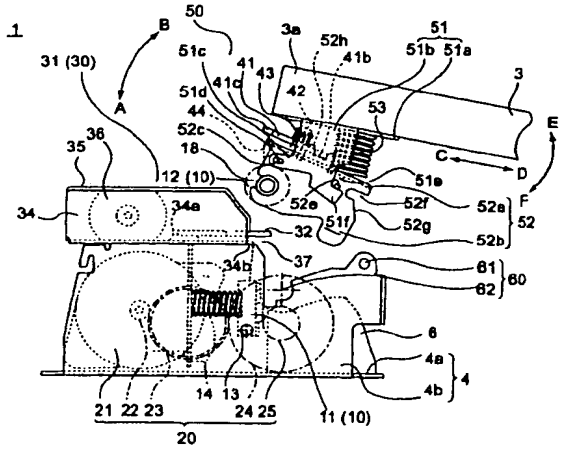

FIG.2

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Description

[0001] The present invention relates to a printer suitable for use in a point-of-sale (POS) system, for example, and relates more particularly to a mechanism for opening and closing the transport path for the printing medium for loading the printing medium to the printer.

[0002] Printers of this type generally have a printing mechanism for printing on a printing medium in roll form, referred to simply as roll paper below. A typical printing mechanism has a print head and a platen. When a paper roll is loaded into the printer, it is necessary to unroll a certain length of paper from the paper roll and to insert it into a gap between the print head and the platen. To facilitate this, the platen is usually disposed on a cover of a compartment accommodating the paper roll while the print head is disposed on the printer frame. The cover is movable relative to the printer frame so that the transport path between the platen and the print head can be opened and closed by moving the cover between an opened and a closed position. When the cover is closed, the roll paper is pressed against the print head by the platen so that the printer can print on the roll paper held between the print head and platen.

[0003] Some printers of this type also have a paper cutting mechanism on the downstream side of the printing mechanism for cutting the printed roll paper for issuing a receipt, for example.

[0004] This paper cutting mechanism typically has a movable blade and a stationary blade on opposite sides of the paper transport path. The stationary blade is typically fixed to the cover and the movable blade is mounted on the printer frame. When the cover is closed, the movable blade is positioned opposite the stationary blade with the paper transport path in between so that the roll paper disposed between the movable blade and stationary blade can be cut by sliding the movable blade crosswise to the stationary blade. An exemplary printer of this type is taught, for example, in US-A-5,579,043.

[0005] One of the drawbacks of a printer like this is that, because the platen is provided on a movable cover, engagement of the platen and print head can vary between before and after an opening/closing operation of the cover if there is any play in the pivot supporting the cover on the printer frame. This can lead to a drop in print quality.

[0006] Another drawback of such printers having a paper cutting mechanism like the one explained above is that the engagement of the stationary blade and movable blade may also change between before and after an opening/closing operation of the cover if there is any play in pivot. This can lead to deficient cutting of the printing medium.

[0007] Furthermore, the distance between the pivot axis of the cover, on the one hand, and the printing mechanism as well as the paper cutting mechanism, on the other hand, tends to be great in a printer designed to accommodate a paper roll of a large diameter; in such case the same problems occur when the dimensional precision of the cover is poor or cover rigidity is low.

[0008] The present invention seeks to solve these problems of the prior art, and its object is to provide a printer having the platen and the print head of a printing mechanism mounted on two different parts that are pivotally connected to each other, wherein the platen and the print head are appropriately positioned relative to each other and a high print quality is maintained, regardless of the positioning precision of the pivot structure and the dimensional precision or rigidity of the cover.

[0009] Furthermore, by holding the stationary blade and movable blade of the paper cutting mechanism appropriately positioned relative to each other regardless of the characteristics of the cover, the present invention seeks to provide a printer that is free of the above paper cutting problems.

[0010] This object is achieved with a printer as claimed in claim 1. Preferred embodiments are subject-matter of the dependent claims.

[0011] Even if the second frame, e.g., a cover, deviates slightly from the ideal opening and closing path due to variations in the positioning precision of a pivot of the second frame on the first frame, e.g., a printer frame, the support member is aligned by the alignment mechanism to assume the predetermined position relative to the first frame. In one embodiment of the present invention, the aligning mechanism comprises a guide mechanism and a holding mechanism. When the cover is moved into the closed position, the support member is guided to move into the predetermined position relative to the first frame. And then, the support member is held in that position by the holding mechanism.

[0012] A printer according to the present invention further preferably comprises a pair of cutting blades disposed on either side of the printing medium transport path downstream of the printing mechanism. The blades are movable to or away from each other across the printing medium transport path to cut a printing medium in the medium transport path between them. One of these blades is supported on the support member. When the cover is closed, according to one embodiment of the present invention, the support member is moved as described above to a position for aligning the printing mechanism. Because one of the blades is supported on the support member, the support member also determines the mutual positions of the cutter blades.

[0013] Therefore, by thus positioning the cutter blades to a position at which they can slide crosswise relative to each other, a printing medium printed by the printing mechanism can be reliably cut by the cutter blades, and the cutting performance of the cutting blades can be maintained.

[0014] Other objects and attainments together with a fuller understanding of the invention will become

apparent and appreciated by referring to the following description of a preferred embodiment taken in conjunction with the accompanying schematic drawings, in which:

Fig. 1 shows the configuration of a printer according to a preferred embodiment of the invention;

Fig. 2 shows the configuration of the printer when the cover is open;

Fig. 3 is a perspective view of the support mechanism of the printer;

Fig. 4 shows the support mechanism at the begin of a closing movement of the cover;

Fig. 5 shows the support mechanism immediately before the cover reaches its closed position; and

Fig. 6 shows the support mechanism when the cover is in its closed position.

[0015] As shown in Fig. 1, a printer 1 according to a preferred embodiment of the invention has a box shaped main case 2 made of a resin material, for example, and having a rectangular bottom 2a. A cover 3 is supported on a support shaft 9 at the top front part (top right as seen in Fig. 1) of this main case 2 so that the cover 3 can be opened and closed freely on support shaft 9 in the direction of arrows A and B. In the direction of the longer side of the bottom 2a, this cover 3 is shorter than the main case 2. When closed, the cover 3 is substantially parallel to the bottom 2a of main case 2.

[0016] A main frame 4, typically made of metal, is disposed inside main case 2 at the back side thereof (left side as seen in Fig. 1). This main frame 4 has a bottom 4a and a pair of parallel side walls 4b formed with the bottom 4a in between.

[0017] A paper compartment 5 for holding a paper roll R is disposed inside main case 2 at the front side thereof (right side as seen in Fig. 1), below cover 3.

[0018] As shown in Fig. 1 and Fig. 2, printer 1 has a printing mechanism 10 for printing on roll paper S paid out from paper roll R through paper transport path P, and a cutting mechanism 30 for cutting the printed roll paper S.

[0019] The printing mechanism 10 comprises a print head 11, a thermal head for printing on heat sensitive paper in this embodiment, and a platen, a platen roller 12 in this embodiment, for supporting the roll paper S between itself and the thermal head 11. A paper guide 6 is disposed at a place on the front side of the main frame 4 to extend between the two side walls 4b in parallel to a platen roller 12. The paper guide 6 forms part of a paper transport path P and its upper surface guides the roll paper S unrolled from the paper roll R as shown in Fig. 1.

[0020] The print head 11 is disposed downstream of the roll paper compartment 5 in the direction of paper travel along the paper transport path P, and is pivotally mounted on main frame 4 so as to rotate around a support shaft 13. The print head 11 is urged toward the paper transport path P by a head pressure spring 14.

[0021] The platen roller 12 is disposed on a support mechanism 50 further described below and fixed to the underside of the cover 3 near that end of the cover 3 that faces the paper transport path P.

[0022] When the cover 3 is closed, the platen roller 12 is disposed opposite the print head 11 with the paper transport path P in between.

[0023] A drive mechanism 20 for rotating the platen roller 12 is disposed on the main frame 4. This drive mechanism 20 comprises a drive motor 21 in an area near to the back side of the main frame 4. Rotational drive power of the drive motor 21 is transferred from a motor gear 22 to an intermediate gear 24 by way of a reduction gear 23. A further gear member 25 is disposed beside and coaxial with intermediate gear 24.

[0024] Referring to Fig. 3, a platen gear 17 is fixed to one end of a platen shaft 16 of platen roller 12 so that when the cover 3 is closed, platen gear 17 meshes with the gear member 25, and platen roller 12 can thus be rotated in a desired direction.

[0025] Referring again to Fig. 1 and Fig. 2, cutting mechanism 30 comprises a stationary blade 41 and a cutter unit 31 having a movable blade 32. Cutter unit 31 is fixed to main frame 4, while stationary blade 41 is carried by the support mechanism 50.

[0026] The cutter unit 31 is disposed downstream of the printing mechanism 10 in the paper travel direction along the paper transport path P, and in the upper portion of main frame 4. The cutter unit 31 has a cutter case 33 comprising a cutter frame 34 and cutter cover 35. The movable blade 32 is provided inside the cutter case 33, as is a cutter motor 36 for driving this movable blade 32.

[0027] At one side of the cutter case 33 is an opening 37 through which the movable blade 32 is extended and retracted when it is driven by cutter motor 36. The opening 37 faces the paper transport path P. An edge 34b of a bottom 34a of cutter frame 34 is formed slightly projecting from opening 37 at the bottom edge of the opening 37.

[0028] The movable blade 32 is driven by the cutter motor 36 through, for example, intervening gears (not shown in the figures). The movable blade 32 thus reciprocates between an extended position (the solid-line position in Fig. 2) at which the movable blade 32 has moved out from opening 37 and crossed the paper transport path P, and a retracted position (the dotted-line position in Fig. 2) at which the movable blade 32 is positioned inside the cutter case 33.

[0029] The stationary blade 41 is disposed on the

support mechanism 50 so that when the cover 3 is closed, the stationary blade 41 is positioned opposite the movable blade 32 of cutter unit 31 with the paper transport path P in between.

[0030] As shown in Fig. 2, the support mechanism 50 comprises an mounting frame 51 fixed to the cover 3, a support frame (support member) 52 disposed on the mounting frame 51, and a coil compression spring (flexible member) 53 provided between mounting frame 51 and support frame 52. The platen roller 12 and the stationary blade 41 are both mounted on the support frame 52 of support mechanism 50.

[0031] This support frame 52 is designed to move relative to the mounting frame 51 both, pivotally and slidingly, within a specific range of movement. When the cover 3 is in its open position shown in Fig. 2, support frame 52 is held in a fixed position relative to mounting frame 51 by the urging force of compression spring 53 acting between the two.

[0032] The mounting frame 51, having a mounting part 51a and two parallel arms 51b with mounting part 51a in between, forms a bracket opening downward. These arms 51b extend orthogonally to the cover 3 when the mounting part 51a is fixed to the leading end 3a of cover 3.

[0033] The support frame 52, having a base 52a and two parallel arms 52b with base 52a in between, likewise forms a bracket opening downward. The distance between the arms 52b of support frame 52 is slightly shorter than the distance between the arms 51b of mounting frame 51, and slightly longer than the gap between side walls 4b of main frame 4.

[0034] An engaging pin 52c is fixed at the rearward end of both arms 52b of support frame 52 so as to project to the outside of the respective arm 52b. A protrusion 51c projecting in the lengthwise direction of cover 3 (referred to below as the "cover edge direction" and indicated by arrow C in Fig. 2) is formed at the end of both arms 51b of mounting frame 51. An oval engaging hole 51d long in the directions C and D is formed in each protrusion 51c and receives the respective pin 52c of support frame 52.

[0035] The engaging pins 52c fit with a slight amount of play in engaging holes 51d with arms 52b of support frame 52 accommodated inside the arms 51b of mounting frame 51. As a result, the support frame 52 is movably supported by mounting frame 51 so that it can move in the direction C or D, and pivot around engaging pins 52c as indicated by arrows E and F.

[0036] An engaging tab 52e is formed near the front end of each arm 52b of support frame 52 so as to protrude to the outside of the respective arm 52b. An recess 51e roughly centered at engaging hole 51d is formed at the front edge part of arms 51b of mounting frame 51. A abutment tab 51f for engaging tab 52e of support frame 52 is formed at the bottom end of this recess 51e.

[0037] When support frame 52 is supported on mounting frame 51, the engaging tabs 52e of support frame 52 are positioned in the recesses 51e, respectively, of mounting frame 51, thus limiting the movement of support frame 52 relative to mounting frame 51 in the directions E and F.

[0038] When the force of compression spring 53 pushes engaging tabs 52e of support frame 52 against abutment tabs 51f, respectively, of mounting frame 51, the support frame 52 is held in a predetermined angle, e.g., in this embodiment, inclined to mounting frame 51 in the direction F.

[0039] Furthermore, since the force of compression spring 53 pushes engaging pins 52c of support frame 52 to one end of engaging holes 51d, respectively, in mounting frame 51, the support frame 52 is also held in a predetermined position, e.g., in this embodiment slightly offset relative to mounting frame 51 in the direction D.

[0040] The support mechanism 50 thus comprised allows that, when cover 3 is closed, platen roller 12 and stationary blade 41 are positioned and aligned relative to print head 11 and movable blade 32, respectively, by a positioning mechanism 60 disposed on the main frame 4. The positioning mechanism 60 has positioning notches 62 and positioning shafts or pins 61 for positioning the support frame 52 in a predetermined position relative to the main frame 4.

[0041] It should be noted that a positioning pin 61 is fixed at the front top of each side wall 4b of main frame 4 projecting to the outside of the respective side wall 4b. An engaging notch 52f for engaging a respective positioning pin 61, and a guide edge 52g for guiding that positioning pin 61 to the engaging notch 52f, are formed in the front edge part of both arms 52b of support frame 52.

[0042] As shown in Fig. 3, a bearing member 18 rotatably supporting platen shaft 16 on support frame 52 is affixed at the end of both arms 52b of support frame 52. The platen roller 12 is supported to be freely rotatable by these bearing members 18. As shown in Fig. 2, the positioning notch 62, which is provided in both side walls 4b of main frame 4 at a position opposite print head 11, has substantially the same shape and size as part of the outside profile of bearing member 18.

[0043] As shown in Fig. 2 and Fig. 3, an engaging protrusion 41b is formed on each lateral side of the stationary blade 41 .A U-shaped recess is defined between each pair of supporting protrusions 52h formed on both arms 52b of support frame 52 so as to protrude from base 52a in the direction toward mounting part 51a. Stationary blade 41 is thus rockably supported on support frame 52 as a result of engaging protrusions 41b being received in these U-shaped recesses, respectively.

[0044] With studs 42 fastened to base 52a of support frame 52 and passing through stationary blade 41, stationary blade 41 is held with the part around its rear edge 41a (cutting edge) pressed against base 52a of

support frame 52 by the force of compression springs 43 attached to studs 42 and stationary blade 41.

[0045] It should be noted that a blade cover 44 for covering edge 41a of stationary blade 41 is disposed on base 52a of support frame 52. The blade cover 44 not shown in Fig. 3 is made from a thin metal plate fixed to the base 52a and bent upward in front of the stationary blade to cover the stationary blade when the support frame 52 is moved away from the main frame 4 and the stationary blade abuts against the base 52a.

[0046] The support mechanism 50 thus comprised allows that, when the cover 3 is closed, the support frame 52 is positioned with its base 52a and mounting part 51a of mounting frame 51 being held substantially in parallel as a result of engaging notch 52f of support frame 52 engaging positioning pin 61 of main frame 4.

[0047] When the support frame 52 is thus positioned, the bearing members 18 of platen roller 12 are received in positioning notches 62 of main frame 4, and the platen roller 12 is thus precisely positioned opposite print head 11.

[0048] Furthermore, when the support frame 52 is thus positioned and the lateral ends 41c of edge 41a engage edges 34b of cutter frame 34, respectively, the stationary blade 41 is held substantially in parallel to base 52a of support frame 52, and at a position where a sliding action can be achieved with the movable blade 32.

[0049] Referring to Fig. 2 and Fig. 4, when the cover 3 is turned in the direction of arrow A as shown in Fig. 2 to close the paper transport path P and the roll paper compartment 5, guide edges 52g of support frame 52 slide over positioning pins 61 of main frame 4 (see Fig. 4) in conjunction with the cover's motion in the direction of arrow A.

[0050] When cover 3 is then further rotated in the direction of arrow A, positioning pins 61 of main frame 4 fit into engaging notches 52f, respectively, of support frame 52. More specifically, as a result of the repulsion received by support frame 52 from positioning pins 61 against the force of compression spring 53, engaging notches 52f, support frame 52 rotates around positioning pins 61 in the direction E and moves in the cover edge direction C with respect to mounting frame 51 as shown in Fig. 5, and thus fits onto positioning pins 61 of main frame 4.

[0051] This action also causes bearing members 18 of platen roller 12 to approach positioning notches 62, and stationary blade 41 to approach cutter frame edge 34b.

[0052] When cover 3 is then closed as shown in Fig. 6, bearing members 18 of platen roller 12 engage positioning notches 62 of main frame 4, and support frame 52 is thus engaged.

[0053] In this position the platen roller 12 is held and positioned opposite the print head 11, and the print head 11 is pressed against the platen 12 by the force of head pressure spring 14.

[0054] Furthermore, with the ends 41c of stationary blade 41 engaged with the edge 34b of cutter frame 34 in resistance to the force of compression springs 43, stationary blade 41 rotates around engaging protrusions 41b supported in the recesses defined by supporting protrusions 52h of support frame 52. As a result, the stationary blade is aligned and positioned slideably relative to movable blade 32 with the edge 41a thereof exposed upward from blade cover 44.

[0055] The platen roller 12 is then rotated to feed roll paper S through paper transport path P while print head 11 is driven according to print data received from a host device to print on roll paper S. The roll paper S can then be cut by sliding movable blade 32 across stationary blade 41.

[0056] It will thus be understood that support frame 52 can move partially independently of the opening and closing movement of cover 3 in a printer according to this preferred embodiment of the invention. As a result, the platen roller 12 can be positioned relative to the print head 11 completely independently of the position which cover 3 finally assumes when it is closed and irrespective of the positioning precision of support shaft 9 pivotally supporting cover 3.

[0057] It is therefore possible by means of the present invention to maintain the print quality of the printing mechanism 10.

[0058] Furthermore, because the stationary blade 41 is likewise supported on the support frame 52, the stationary blade 41 can also be precisely positioned for cooperation with the movable blade 32 in the same way in which the platen roller is positioned relative to the print head.

[0059] It is therefore also possible by means of the present invention to maintain the cutting performance of the cutting mechanism 30.

[0060] It will also be obvious that the present invention shall not be limited to the preferred embodiment described above, and can be varied in many ways.

[0061] For example, the platen roller 12 is disposed on the support frame 52 in the above exemplary embodiment. However, it is also possible to dispose the print head 11 on the support frame 52, and the platen roller 12 on the main frame 4. However, the preferred embodiment described above is more desirable from the perspective of protecting the print head 11.

[0062] Furthermore, this configuration of the support mechanism part 50 is only one possible example of the many variations whereby the support mechanism 50 can be moved for alignment partially independently of the opening and closing action of the cover 3.

[0063] In addition, a thermal print head 11 is used as the print head in the printing mechanism 10 described above, but other printing methods can also be used, including ink jet and dot impact methods. However, the present invention is most effective when applied with a printing mechanism that prints with the print head pressed against the platen roller 12, similarly

to the above noted thermal print head 11.

Claims

1. A printer having

   a print head (11);
   a platen (12);
   a first frame (4);
   a second frame (3, 51) supported by said first frame (4) so as to be movable relative to the first frame between a closed position and an open position, wherein one of the print head (11) and the platen (12) is mounted on the first frame (4) while the other one is mounted on the second frame (3, 51); and
   a support member (52) for supporting said one of the print head (11) and the platen (12) on the second frame (3, 51), the support member (52) being movably mounted with respect to the second frame (3, 51);
   characterized by
   a first pivot mechanism (61, 52f) for guiding rotational movement of the support member (52) to a first predetermined position with respect to the first frame (4) when the second frame (3, 51) is moved from said open to said closed position.

2. A printer according to claim 1, wherein the first pivot mechanism comprises:

   a shaft (61) provided on one of the support member (52) and the first frame (4); and
   a notch (52f) provided on the other one of the support member and the first frame for engaging the shaft.

3. A printer according to claim 2, wherein the pivot mechanism further comprises:

   a guide surface (52g) disposed adjacent to the notch (52f) for guiding the shaft (61) to the notch when the second frame (3, 51) is moved from said open to said closed position.

4. A printer according to any one of claims 1 to 3, further comprising:

   an elastic member (53) disposed between the second frame (3, 51) and the support member (52) for positioning the support member in a second predetermined position relative to the second frame (3, 51) when the second frame (3, 51) is in its open position, the first pivot mechanism being configured to perform its guiding action upon the support member (52) abutting against the first frame (4) while the second frame (3, 51) is moved from said open to said closed position.

5. A printer according to claim 4, further comprising:

   stopping means (51f, 52e) for stopping the relative movement of the support member (52) with respect to the second frame (3, 51) at the second predetermined position.

6. A printer according to any one of claims 1 to 5, further comprising:

   a sliding mechanism (51d, 52c) for guiding sliding movement of the support member (52) with respect to the second frame (3, 51) when the second frame (3, 51) is moved from said open to said closed position.

7. A printer according to claim 6, wherein the sliding mechanism comprises:

   a protrusion (52c) disposed on one of the support member (52) and the second frame (3, 51); and
   an opening (51d) disposed on the other one of the support member and the second frame for accommodating the protrusion.

8. A printer according to any one of claims 1 to 7, further comprising:

   a second pivot mechanism (51d, 52c) for pivotally mounting the support member (52) on the second frame (3, 51) and guiding pivotal movement of the support member (52) with respect to the second frame (3, 51) when the second frame (3, 51) is moved from said open to said closed position.

9. A printer according to claim 8 wherein the second pivot mechanism comprises:

   a protrusion (52c) disposed on one of the support member (52) and the second frame (3, 51); and
   an opening (51d) disposed on the other one of the support member and the second frame for engaging the protrusion.

10. A printer according to any one of claims 1 to 9, further comprising:

    a holding mechanism (18, 62) for holding the support member in the first predetermined position when the second frame (3, 51) is in its closed position.

11. A printer according to claim 10 wherein the holding mechanism comprises:

a platen shaft (16) concentric with the platen (12);
a bearing (18) for rotatably mounting the platen shaft on said one of the support member (52) and the first frame (4);
a receiving notch (62) disposed on the other one of the support member and the first frame for receiving the bearing therein; and
a resilient member (14) for pressing the print head (11) against the platen (12) so that the bearing is placed inside of the receiving notch.

12. A printer according to claim 1, wherein the second frame further comprises:

a mounting member (51) for movably mounting the support member (52) on the second frame (3, 51).

13. A printer according to claim 12, comprising:

an elastic member (53) disposed between the mounting member (51) and the support member (52) for positioning the support member a second predetermined position relative to the mounting member (51) when the second frame (3, 51) is in its open position,
and wherein the first pivot mechanism is configured to perform its guiding action upon the support member (52) abutting against the first frame (4) while the second frame (3) is moved from said open to said closed position.

14. A printer according to claim 13, further comprising:

stopping means (51f, 52e) for stopping the relative movement of the support member (52) with respect to the mounting member (51) at the second predetermined position.

15. A printer according to claim 12, 13 or 14, further comprising:

a sliding mechanism (51d, 52c) for guiding sliding movement of the support member (52) with respect to the mounting member (51) when the second frame (3, 51) is moved from said open to said closed position.

16. A printer according to claim 15, wherein the sliding mechanism comprises:

a protrusion (52c) disposed on one of the support member (52) and the mounting member (51); and
an opening (51d) disposed on the other one of the support member and the mounting member for accommodating the protrusion.

17. A printer according to any one of claims 12 to 16, further comprising:

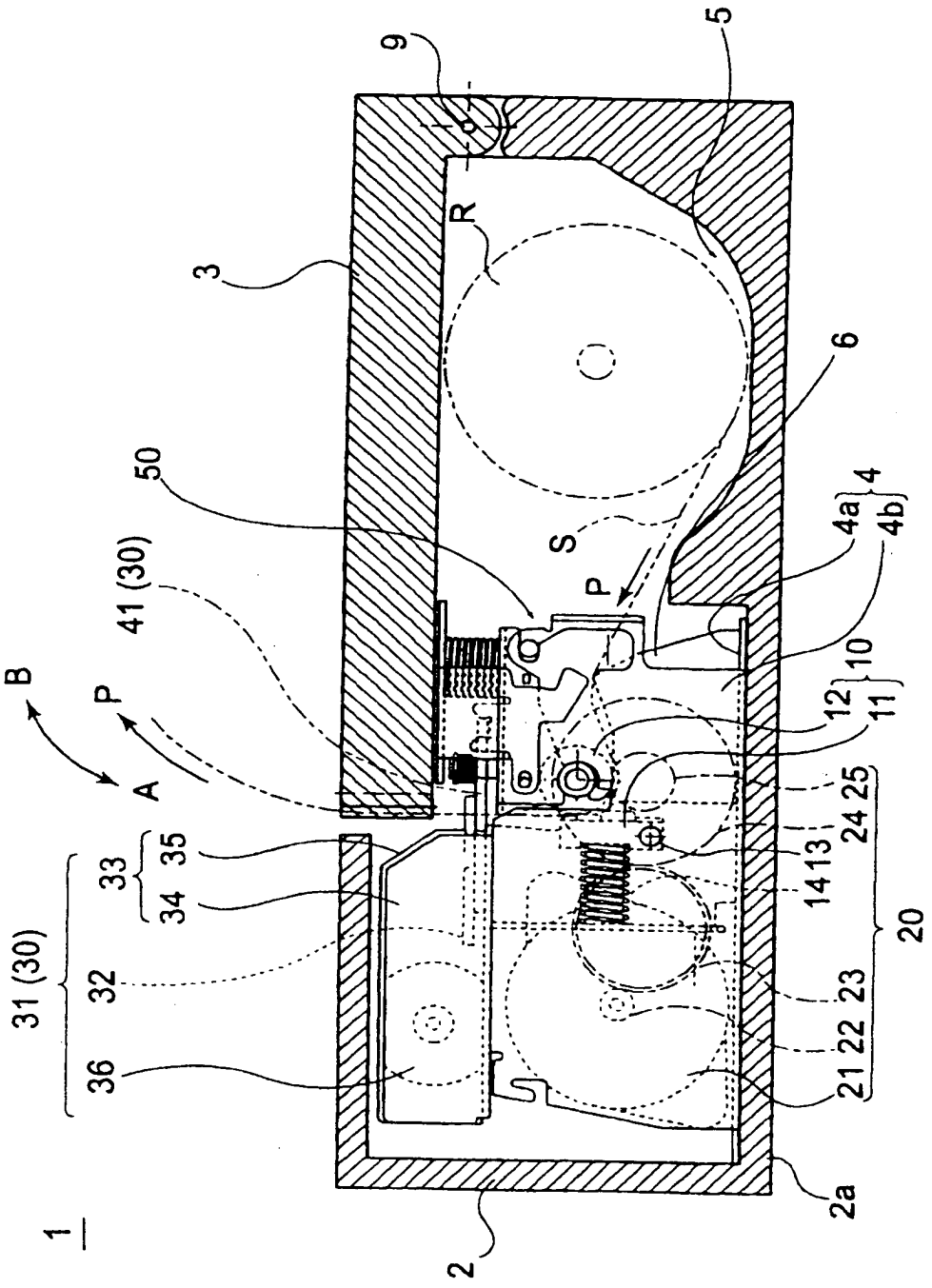
a second pivot mechanism (51d, 52c) for pivotally mounting the support member (52) on the mounting member (51) and guiding pivotal movement of the support member (52) with respect to the second frame (3, 51) when the second frame (3, 51) is moved from said open to said closed position.

18. A printer according to claim 17 wherein the second pivot mechanism comprises:

a protrusion (52c) disposed on one of the support member (52) and the mounting member (51); and
an opening (51d) disposed on the other one of the support member and the mounting member (51) for engaging the protrusion.

19. A printer according to any one of the preceding claims, further comprising:

a stationary blade (41) mounted on one of the support member (52) and the first frame (4); and
a movable blade (31) mounted on the other one of the support member and the first frame for cutting, in cooperation with the stationary blade, a printing medium printed by the print head (11).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R
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4b
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P
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12
11
B
P
A
θ
25
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22
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FIG.1

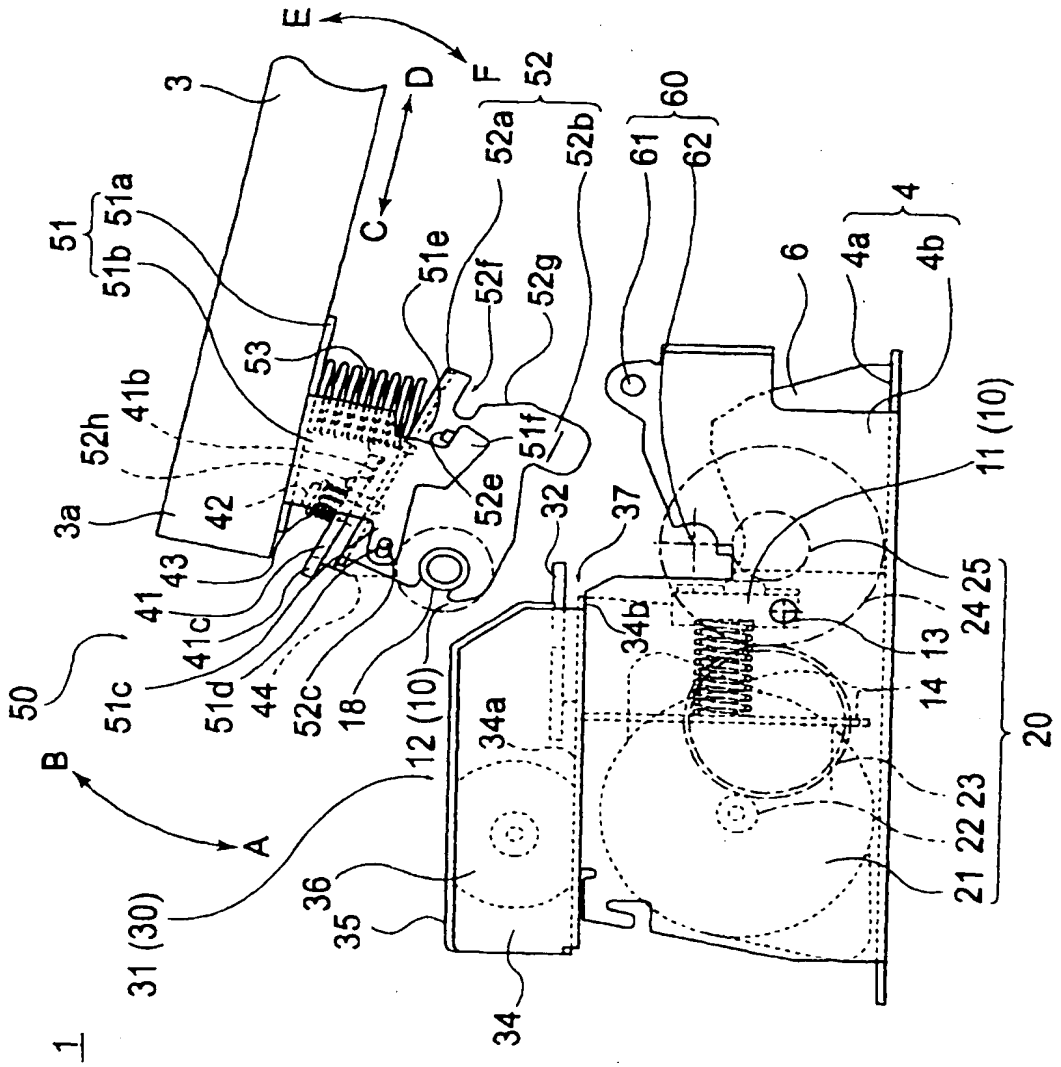
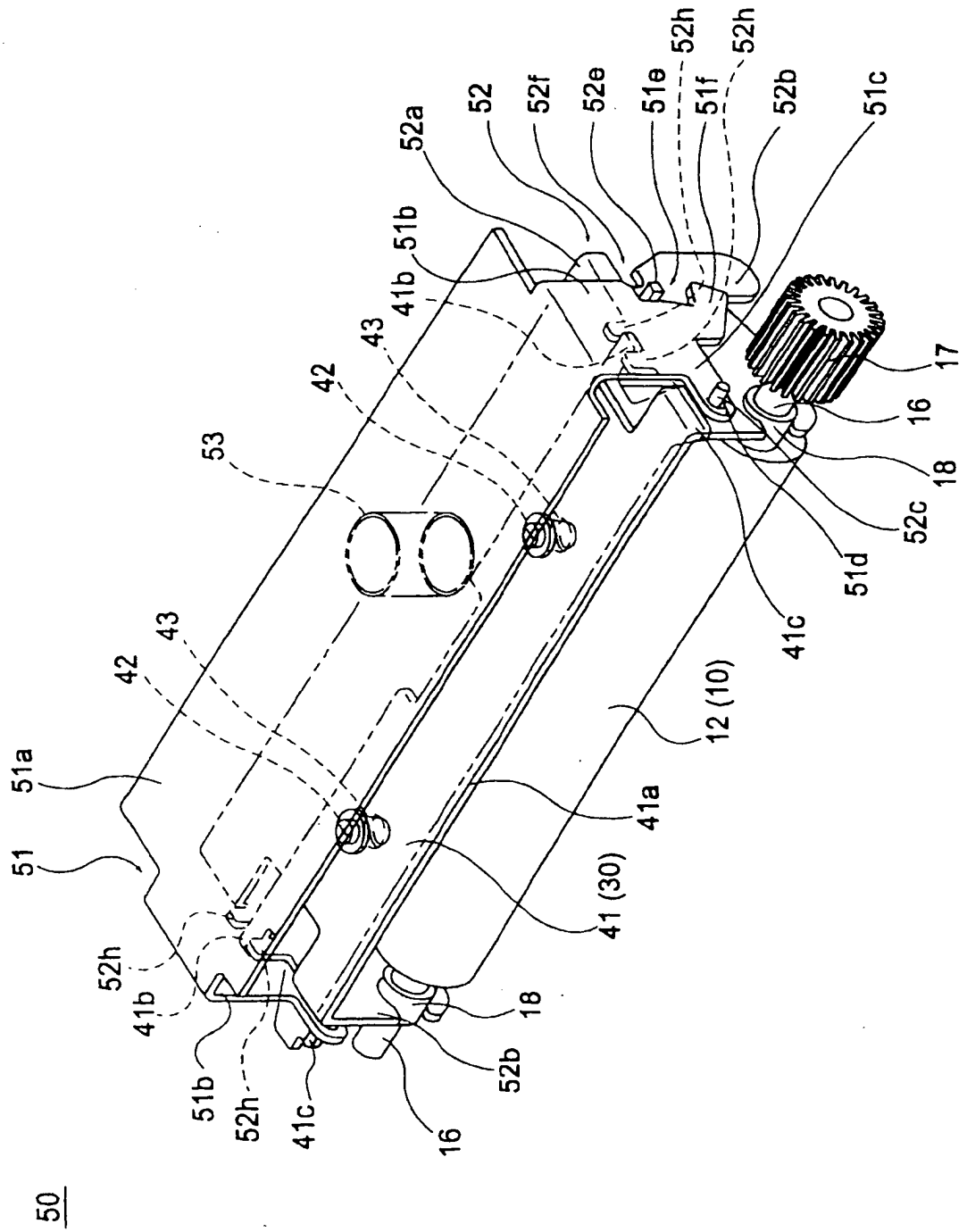


FIG.2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51
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52h
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16
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FIG.3

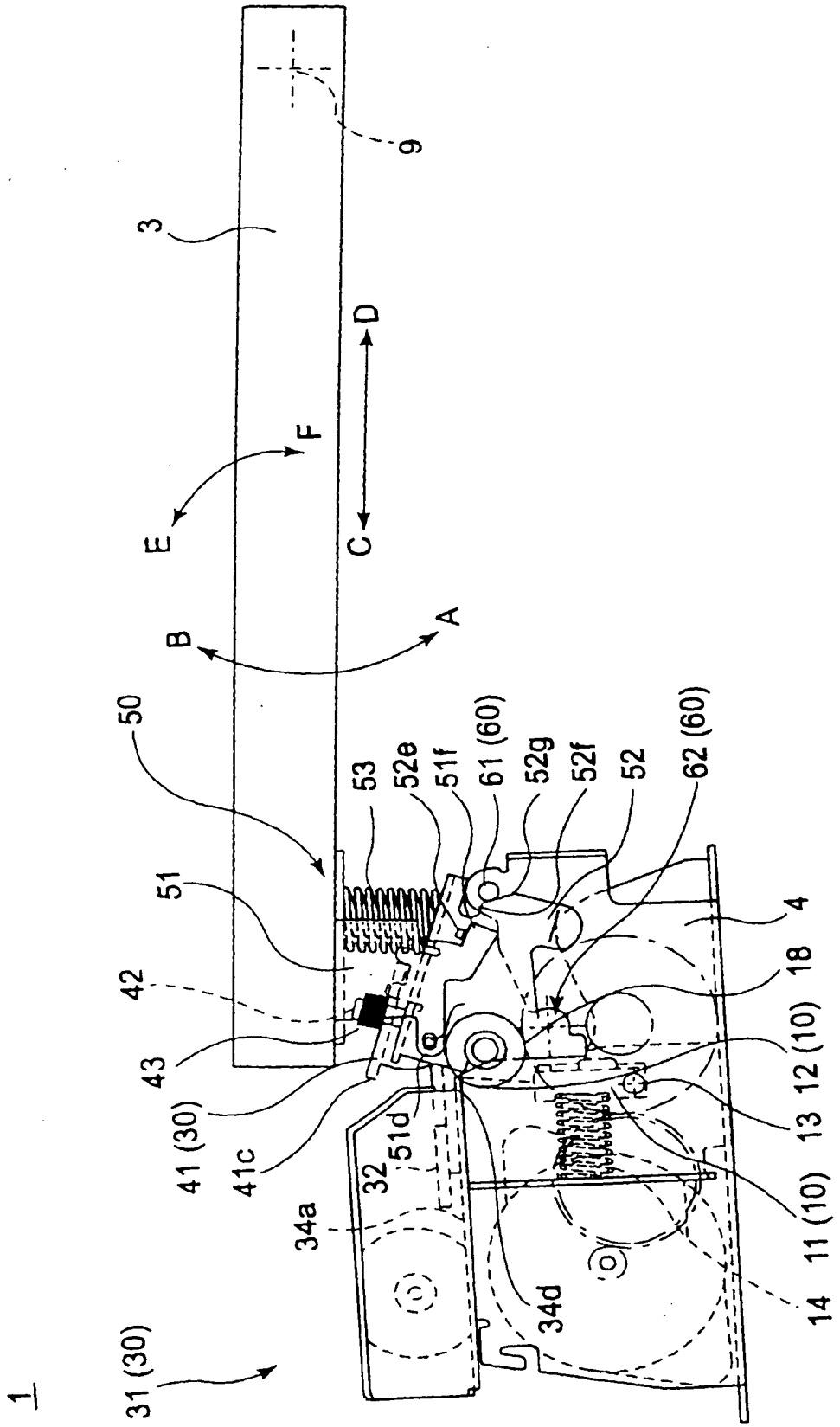

FIG.4

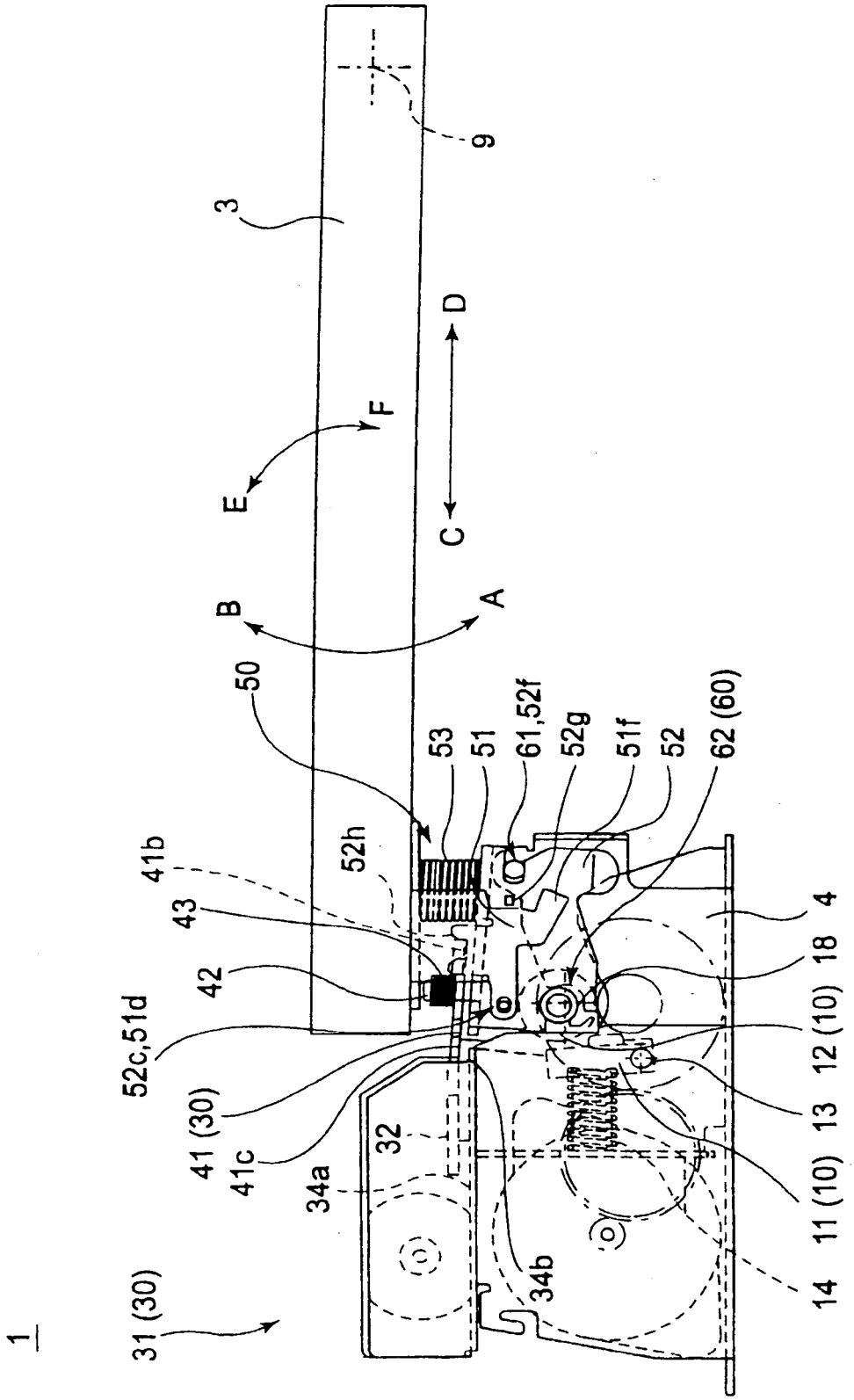
1
31 (30)
34b
34a
32
41c
41 (30)
52c,51d
42
43
41b
52h
50
53
51
61,52f
52g
51f
52
62 (60)
4
18
12 (10)
13
11 (10)
14
A
B
C
D
E
F
3
9

FIG.5

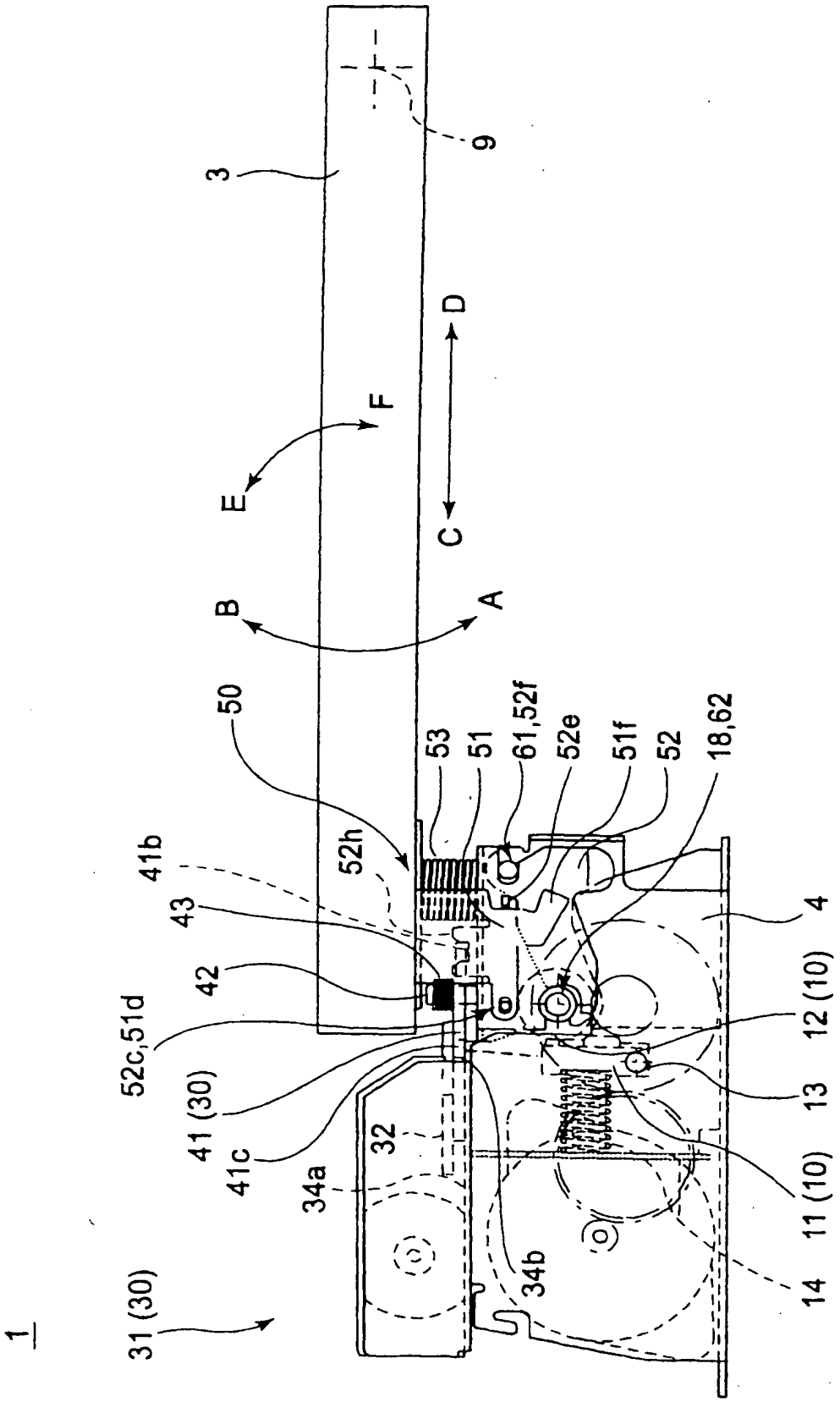

FIG.6

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(57) A support mechanism (50) has an mounting frame (51) fixed to a cover (3), a support frame (52) for supporting a platen roller (12) and a stationary blade (41), and a compression spring (53) attached to the mounting frame (51) and the support frame (52). The support frame (52) can pivot relative to the mounting frame (51) around engaging pins (52c) of the support frame (52), and slide relative to a pivot of the cover (3). A positioning pin (61) and a positioning notch (62) are provided on a main frame (4) that pivotally supports the cover for positioning the support frame (52) to a position at which the platen roller (12) and the stationary blade (41) are aligned with and positioned opposite a print head (11) and a movable blade (32), respectively.

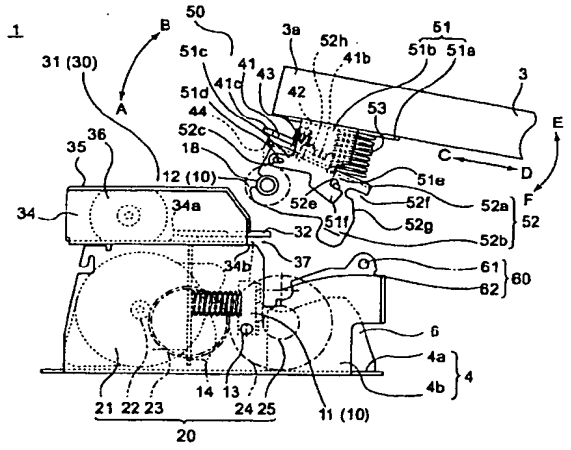

FIG.2

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EUROPEAN SEARCH REPORT

Application Number
EP 00 10 6433

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B41J

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	16 November 2000	Wehr, W

CATEGORY OF CITED DOCUMENTS

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D : document cited in the application
L : document cited for other reasons

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